

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/FR 03/01876

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/55 C12N9/18 C12Q1/68 C07K16/40 A01K67/027

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, EMBL, BIOSIS, Sequence Search

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE EMBL 'Online!  19 February 2001 (2001-02-19),  J.R. GAO ET AL: "Schizaphis graminum  acetylcholinesterase precursor, mRNA,  complete cds"  XP002234929  retrieved from EBI, HINXTON, UK  Database accession no. AF321574  abstract  -&amp; J.R. GAO ET AL: "Molecular cloning and  characterization of a greenbug (Schizaphis  graminum) cDNA encoding  acetylcholinesterase possibly evolved from  a duplicate gene lineage" INSECT  BIOCHEMISTRY AND MOLECULAR BIOLOGY,  vol. 32, no. 7, July 2002 (2002-07), pages  765-775, XP002234922</p> <p style="text-align: center;">-----  -/--</p>	9



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*&\* document member of the same patent family

Date of the actual completion of the international search

16 April 2004

Date of mailing of the international search report

29/04/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Le Cornec, N

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE EMBL 'Online!  30 May 2002 (2002-05-30),  P.P. FORT: "Aedes albopictus partial achE1  gene for acetylcholinesterase"  XP002234930  retrieved from EBI, HINXTON, UK  Database accession no. AJ438598  cited in the application  abstract</p> <p>-----</p>	1,3,5, 8-11
X	<p>DATABASE EMBL 'Online!  30 May 2002 (2002-05-30),  P.P. FORT: "Anopheles albimanus partial  achE1 gene for acetylcholinesterase"  XP002234938  retrieved from EBI, HINXTON, UK  Database accession no. AJ438608  cited in the application  abstract</p> <p>-----</p>	1,3,5, 8-11
X	<p>DATABASE EMBL 'Online!  30 May 2002 (2002-05-30),  P.P. FORT: "Anopheles darlingi partial  achE1 gene for acetylcholinesterase"  XP002234931  retrieved from EBI, HINXTON, UK  Database accession no. AJ438599  cited in the application  abstract</p> <p>-----</p>	1,3,5, 8-11
X	<p>DATABASE EMBL 'Online!  30 May 2002 (2002-05-30),  P.P. FORT: "Anopheles funestus partial  achE1 gene for acetylcholinesterase"  XP002234933  retrieved from EBI, HINXTON, UK  Database accession no. AJ438604  cited in the application  abstract</p> <p>-----</p>	1,3,5, 8-11
X	<p>DATABASE EMBL 'Online!  30 May 2002 (2002-05-30),  P.P. FORT: "Anopheles arabiensis partial  achE1 gene for acetylcholinesterase"  XP002234934  retrieved from EBI, HINXTON, UK  Database accession no. AJ438603  cited in the application  abstract</p> <p>-----</p>	3,5,8-11
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Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE EMBL 'Online! 30 May 2002 (2002-05-30), P.P. FORT: "Anopheles sundaicus partial achE1 gene for acetylcholinesterase" XP002234932 retrieved from EBI, HINXTON, UK Database accession no. AJ438600 cited in the application abstract</p> <p>-----</p>	1,3,5, 8-11
X	<p>DATABASE EMBL 'Online! 30 May 2002 (2002-05-30), P.P. FORT: "Anopheles pseudopunctipennis partial achE1 gene for acetylcholinesterase" XP002234936 retrieved from EBI, HINXTON, UK Database accession no. AJ438605 cited in the application abstract</p> <p>-----</p>	1,3,5, 8-11
X	<p>DATABASE EMBL 'Online! 30 May 2002 (2002-05-30), P.P. FORT: "Anopheles moucheti partial achE1 gene for acetylcholinesterase" XP002234937 retrieved from EBI, HINXTON, UK Database accession no. AJ438602 cited in the application abstract</p> <p>-----</p>	1,3,5, 8-11
X	<p>DATABASE EMBL 'Online! 30 May 2002 (2002-05-30), P.P. FORT: "anopheles sachavori partial achE1 gene for acetylcholinesterase" XP002234939 retrieved from EBI, HINXTON, UK Database accession no. AJ438606 cited in the application abstract</p> <p>-----</p>	1,3,5, 8-11
X	<p>DATABASE EMBL 'Online! 30 May 2002 (2002-05-30), P.P. FORT: "anopheles stephensi partial achE1 gene for acetylcholinesterase" XP002234940 retrieved from EBI, HINXTON, UK Database accession no. AJ438607 cited in the application abstract</p> <p>-----</p>	1,3,5, 8-11
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Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE EMBL 'Online!  30 May 2002 (2002-05-30),  P.P. FORT: "anopheles minimus partial  achE1 gene for acetylcholinesterase"  XP002234935  retrieved from EBI, HINXTON, UK  Database accession no. AJ438601  cited in the application  abstract</p>	1,3,5, 8-11
X	<p>DATABASE EMBL 'Online!  30 May 2002 (2002-05-30),  P.P. FORT: "Anopheles nili partial achE1  gene for acetylcholinesterase"  XP002234941  retrieved from EBI, HINXTON, UK  Database accession no. AJ438609  cited in the application  abstract</p>	1,3,5, 8-11
A	<p>MALCOLM C A ET AL: "A sex-linked Ace  gene, not linked to insensitive  acetylcholinesterase-mediated insecticide  resistance in Culex pipiens."  INSECT MOLECULAR BIOLOGY,  vol. 7, no. 2, May 1998 (1998-05), pages  107-120, XP002234923  ISSN: 0962-1075  le document en entier plus  particulièrement pages 116-117</p>	1-28
A	<p>BOURGUET DENIS ET AL: "Determination of  Ace: 1. Genotypes in single mosquitoes:  Toward an ecumenical biochemical test."  PESTICIDE BIOCHEMISTRY AND PHYSIOLOGY,  vol. 55, no. 2, 1996, pages 122-128,  XP002234924  ISSN: 0048-3575  the whole document</p>	1-20
A	<p>MUTERO ANNICK ET AL:  "Resistance-associated point mutations in  insecticide-insensitive  acetylcholinesterase."  PROCEEDINGS OF THE NATIONAL ACADEMY OF  SCIENCES OF THE UNITED STATES,  vol. 91, no. 13, 1994, pages 5922-5926,  XP002234925  1994  ISSN: 0027-8424  cited in the application  the whole document</p>	1-20

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Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>DATABASE EMBL 'Online!  1 March 2002 (2002-03-01),  R.A. HOLT ET AL: "17000687086124 A.  gam.ad.cDNA . blood1 Anopheles gambiae  cDNA clone 19600449729584 5', mRNA  sequence"  XP002234942  retrieved from EBI, HINXTON,UK  Database accession no. BM608195  abstract</p>	9,10
A	<p>N. ANTHONY ET AL: "Cloning, sequencing  and functional expression of an  acetylcholinesterase gene from the yellow  fever mosquito Aedes aegypti"  FEBS LETTERS,  vol. 368, 1995, pages 461-465, XP002234926  the whole document</p>	1-28
A	<p>BOURGUET DENIS ET AL: "Analysis of  molecular forms and pharmacological  properties of acetylcholinesterase in  several mosquito species."  NEUROCHEMISTRY INTERNATIONAL,  vol. 31, no. 1, 1997, pages 65-72,  XP002234927  ISSN: 0197-0186  the whole document</p>	1-28
A	<p>BOURGUET D ET AL: "EXISTENCE OF TWO  ACETYLCHOLINESTERASES IN THE MOSQUITO  CULEX PIPIENS (DIPTERA: CULICIDAE)"  JOURNAL OF NEUROCHEMISTRY, NEW YORK, NY,  US,  vol. 67, no. 5, 1996, pages 2115-2123,  XP008013364  ISSN: 0022-3042  cited in the application  the whole document</p>	1-28
A	<p>S.B. WALSH ET AL: "Identification and  characterization of mutations in housefly  (Musca domestica) acetylcholinesterase  involved in insecticide resistance"  BIOCHEMICAL JOURNAL,  vol. 359, 2001, pages 175-181, XP002234928  cited in the application  the whole document</p>	1-28

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Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	BOURGUET DENIS ET AL: "Duplication of the Ace.1 locus in Culex pipiens mosquitoes from the Caribbean." BIOCHEMICAL GENETICS, vol. 34, no. 9-10, 1996, pages 351-362, XP008015132 ISSN: 0006-2928 the whole document	1-28
P,X	WEILL MYLENE ET AL: "A novel acetylcholinesterase gene in mosquitoes codes for the insecticide target and is non-homologous to the ace gene in Drosophila." PROCEEDINGS OF THE ROYAL SOCIETY BIOLOGICAL SCIENCES SERIES B, vol. 269, no. 1504, 7 October 2002 (2002-10-07), pages 2007-2016, XP008015105 ISSN: 0962-8452 the whole document	1-28
P,X	DATABASE EMBL 'Online! 17 March 2003 (2003-03-17), M. WEILL ET AL: "Culex pipiens mRNA for acetylcholinesterase (achE1 gene), strain SR" XP002248010 retrieved from EBI, HINXTON, UK Database accession no. AJ515147 abstract	1-3,6,9
P,X	-& M. WEILL ET AL: "comparative genomics Insecticide resistance in mosquito vectors" NATURE, vol. 423, 8 May 2003 (2003-05-08), pages 136-137, XP0002269568	1-3,6,9
P,X	DATABASE EMBL 'Online! 16 August 2002 (2002-08-16), FAI LI ET AL: "Aphis gossypii clone ace 2 acetylcholinesterase mRNA, complete cds" XP002248004 retrieved from EBI, HINXTON, UK Database accession no. AF502082 abstract	1,4
P,X	-& FAI LI ET AL: "Two different genes encoding acetylcholinesterase existing in cotton aphid" GENOME, vol. 45, no. 6, 1 November 2002 (2002-11-01), pages 1134-1141, XP008013411	1,4

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Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	<p>DATABASE EMBL 'Online! 7 November 2002 (2002-11-07), P.P. FORT: "Anopheles gambiae partial achE1 gene for acetylcholinesterase, exons 4-9" XP002234943 retrieved from EBI, HINXTON, UK Database accession no. AJ488492 abstract</p>	1,3,4,10
P,X	<p>DATABASE EMBL 'Online! 15 August 2002 (2002-08-15), P.P. FORT: "Culex pipiens partial achE1 gene for acetylcholinesterase, strain S-LAB" XP002234945 retrieved from EBI, HINXTON, UK Database accession no. AJ428047 abstract</p>	8,9,11
P,X	<p>DATABASE EMBL 'Online! 15 August 2002 (2002-08-15), P.P. FORT: "aedes aegypti partial achE1 gene for acetylcholinesterase" XP002234946 retrieved from EBI, HINXTON, UK Database accession no. AJ428049 abstract</p>	8,9,11
P,X	<p>DATABASE EMBL 'Online! 15 August 2002 (2002-08-15), P.P. FORT: "Culex pipiens partial achE1 gene for acetylcholinesterase, strain SR" XP002234947 retrieved from EBI, HINXTON, UK Database accession no. AJ428048 abstract</p>	8,9,11